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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/883,542      | 06/18/2001  | Federico Capasso     | 68-107-2-21-3-37    | 1403             |

7590 02/19/2003

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 02/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/883,542

Applicant(s)

CAPASSO ET AL.

Examiner

Joseph Nguyen

Art Unit

2815

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Objections***

Claim 9 is objected to because of the following informalities: claim 9 should depend from claim 7 since only claim 7 contains the feature recited in claim 9. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitation "said receiver" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "said receiver" in line 1. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Art Unit: 2815

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-11 are rejected under 35 U.S.C. 102(e) as being anticipated by

Capasso et al.

Regarding claim 1, Capasso et al discloses on figure 1 a heterogeneous intersubband optical device having a predetermined function, said device comprising a multiplicity of stacked intersubband sub devices 24 characterized in that at least two of said sub-devices 24.2, 24.3 have different individual gain/loss profiles.

The limitation "said individual gain/loss profiles are mutually adapted to generate said predetermined function" is merely functional language and therefore is not given a patentable weight.

Regarding claim 2, the claim limitation is merely product by process and therefore is not given a patentable weight.

Regarding claims 3-5, 8, the claim limitation is merely functional language and therefore is not given a patentable weight.

Regarding claims 6, 7, 9, 10, Capasso et al discloses on figure 1 all the structure set forth in the claimed invention.

Regarding claim 11, Capasso et al discloses on figure 1 a heterogeneous intersubband optical device having a predetermined gain/loss profile, said device comprising upper and lower cladding regions 12, 16, a core region 14 including a

Art Unit: 2815

multiplicity of intersubband active regions 24 stacked between said cladding regions, each of said active regions including a plurality of radiative transition regions and interleaved therewith a plurality of injection/relaxation regions, means forming an optical cavity resonator, said active regions being located within said resonator, characterized in that at least two of said active regions are different from one another, said regions having a set of characteristic parameters including the peak energy of the ISB transitions, the energy bandwidth of said transitions, the length of said active regions and the doping levels of said regions.

The limitation "wherein said parameters are mutually adapted to generate said predetermined gain/loss profile" is merely functional language and therefore is not given a patentable weight.

Claims 1-6, 8-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Hager et al.

Regarding claim 1, Hager et al discloses on figures 1 and 2 a heterogeneous intersubband optical device having a predetermined function, said device comprising a multiplicity of stacked intersubband sub devices 20 characterized in that at least two of said sub-devices 40, 42 have different individual gain/loss profiles.

The limitation "said individual gain/loss profiles are mutually adapted to generate said predetermined function" is merely functional language and therefore is not given a patentable weight.

Art Unit: 2815

Regarding claim 2, the claim limitation is merely product by process and therefore is not given a patentable weight.

Regarding claims 3-5, 8, the claim limitation is merely functional language and therefore is not given a patentable weight.

Regarding claims 6, 9, Hager et al discloses on figures 1 and 2 all the structure set forth in the claimed invention.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

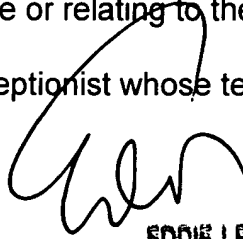
US Patent 6463088 B1 to Baillargeon et al discloses a semiconductor laser.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN  
February 12, 2003

  
**EDDIE LEE**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**